A Pilot Study for Near Real-Time Aerosol Modeling and Air Quality Characterization

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The poster will present the objectives and initial results of a pilot study conducted as a partnership between the U.S. Environmental Protection Agency (U.S. EPA), National Oceanic and Atmospheric Administration (NOAA), and the New York State Department of Environmental Conservation (NYSDEC). The primary objectives of this study are to implement, operate, and evaluate an automated, numerical, model-based air quality forecast system to provide daily predictions of O3 and PM2.5 and to assess the integrated use of modeled and observed concentrations to better characterize the spatial and temporal variations of air quality over New York. Based on simulations for summer 2004 and winter 2005, we will present an overview on the operational aspects such as data transfers, computing power, data storage, and scientific questions, such as the merits and demerits of Community Multiscale Air Quality (CMAQ) model-based forecasts in comparison to traditional approaches.

The pilot study complements the U.S. EPA/NOAA's ongoing air quality forecasting program in several ways. First, while the operational U.S. EPA/NOAA forecast for the Northeast domain focuses on O3, our pilot study is aimed at examining both O3 and PM2.5. Second, the near real-time simulations performed by NYSDEC in partnership with the U.S. EPA/NOAA can serve as an additional testbed for research questions arising from the operational forecast performed by the U.S. EPA/NOAA. For example, while both the U.S. EPA/NOAA and NYSDEC utilize the same ETA forecast fields to drive the air quality model, the use of different boundary conditions in these simulations could be used to address the impact of the choice of boundary conditions on air quality forecasts under a range of meteorological conditions. Third, this partnership with New York State would provide an avenue for testing future CMAQ releases and technology transfer to end-users, as well as a mechanism to provide feedback to the U.S. EPA/NOAA on further improvements in the application of CMAQ.

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